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Non Invasive Imaging (Echocardiography, Nuclear, PET, MR and CT)

CHARACTERIZATION OF REGIONAL DIFFERENCES IN PATHOLOGICAL LV REMODELING: INSIGHTS FROM 3D ECHOCARDIOGRAPHIC ANALYSIS

Poster Contributions
Poster Hall B1
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Session Title: Non Invasive Imaging: Advances in Clinical Non-Invasive Imaging
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Background: LV remodeling is often described simply in terms of LV volumes or dimensions. However, this does not reflect regional patterns of LV remodeling. We examined regional patterns of LV remodeling across a spectrum of disease (severe aortic stenosis-AS; severe aortic/mitral regurgitation-AR/MR; hypertrophic cardiomyopathy-HCM; and non-ischemic dilated cardiomyopathy-DCM) using 3D echo.

Methods: 110 patients (Pts) were analyzed and grouped based on etiology of LV remodeling (20 AS, 10 HCM, 15 AR, 22 MR, and 21 DCM vs 22 normals). Regional patterns of LV wall thickness (WT) were created from 3D datasets by calculating WT at rotational points 3o apart along the circumference of the LV for 100 positions along the length of the LV. The rotational angle (X-axis) was mapped as a function of the position along the LV from base to apex (Y-axis), to obtain a color coded spatial map of LV WT and hypertrophy index (HYPi)-displayed as % of Pts with LV WT≥13 mm at a position (Fig).

Results: The upper septum had the largest WT for all groups. Regional map of HYPi in MR and DCM was similar to normals, with low % of Pts with hypertrophy localized to the upper septum. In AS, % of Pts with hypertrophy was greater but remained localized to septum. In AR and HCM, the HYPi pattern was more diffuse (Fig).

Conclusion: Regional differences in LV wall thickness patterns exist across a spectrum of abnormal LV remodeling conditions. Mapping of LV WT patterns by 3D echo may provide a more quantitative and objective assessment of LV remodeling.